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TC197
.H8

METHOD

OF

SINKING CRIBS,

DEVISED BY

D. C. HOUSTON,
MAJOR OF ENGINEERS, BVT. COLONEL U. S. A.

Printed for the use of the Engineer Department, U. S. A.

WASHINGTON, D. C.
1874.

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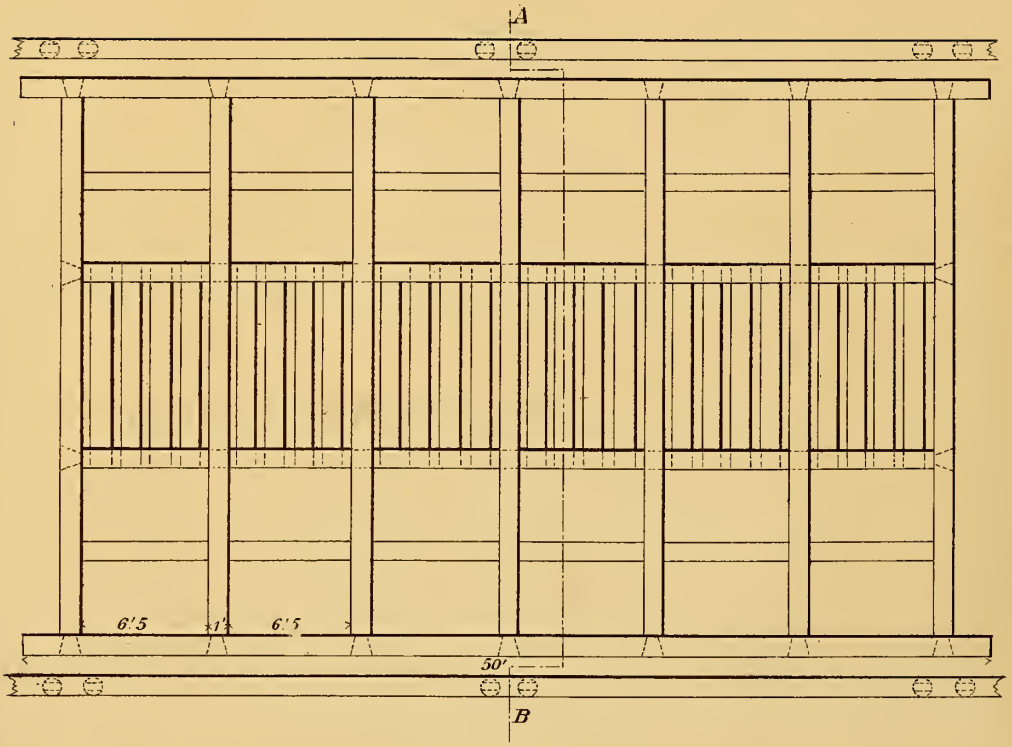
Plan



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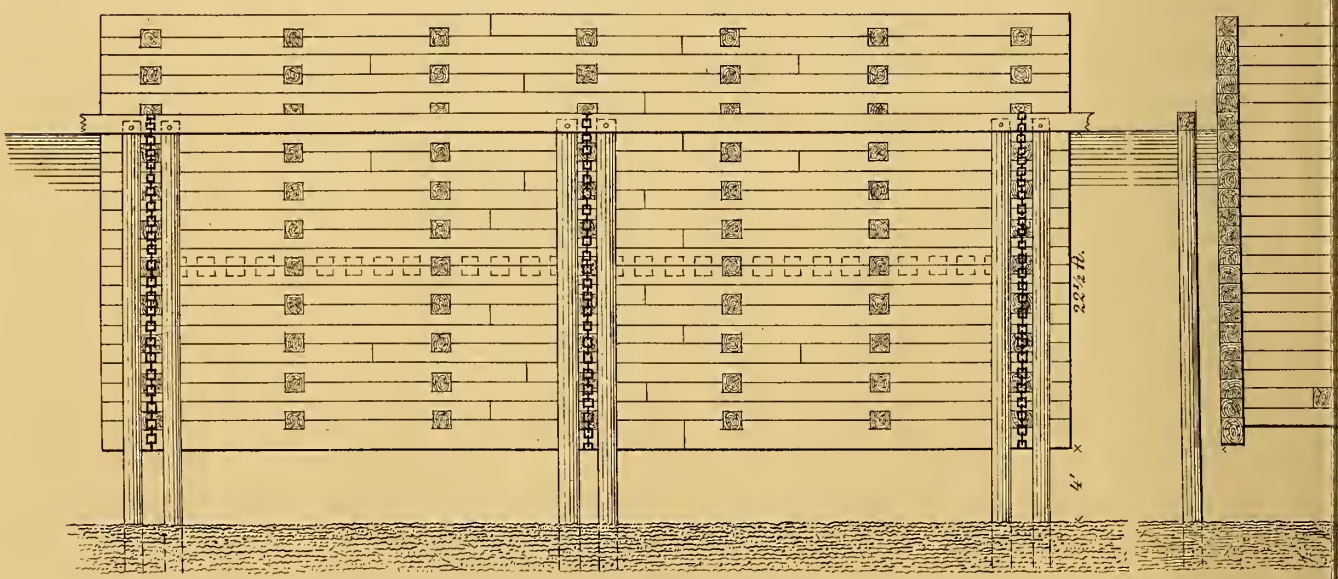
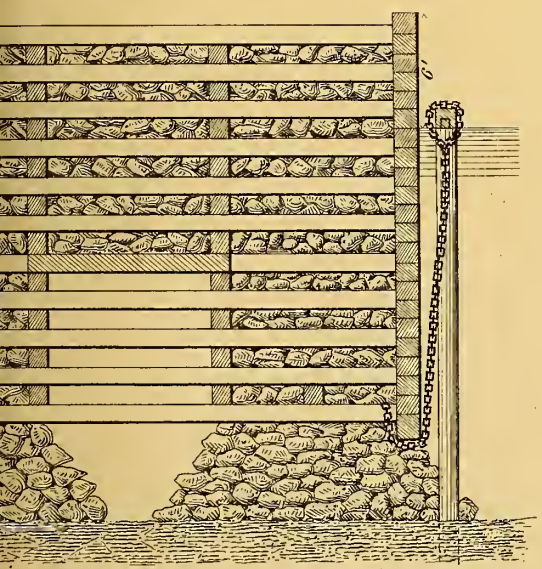
Front Elevation.



Scale 1 in.=10 ft.

Section through line A.B.



PLAN
of
CRIB IN CHICAGO BREAKWATER

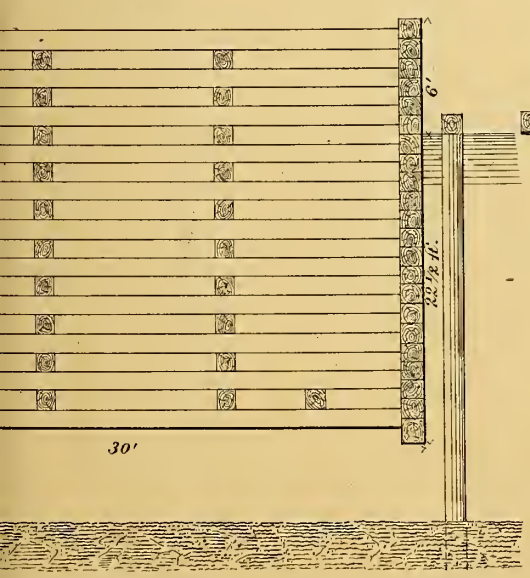
Showing method of sinking

devised by Major D.C. HOUSTON, Corps of Engineers U.S.A.

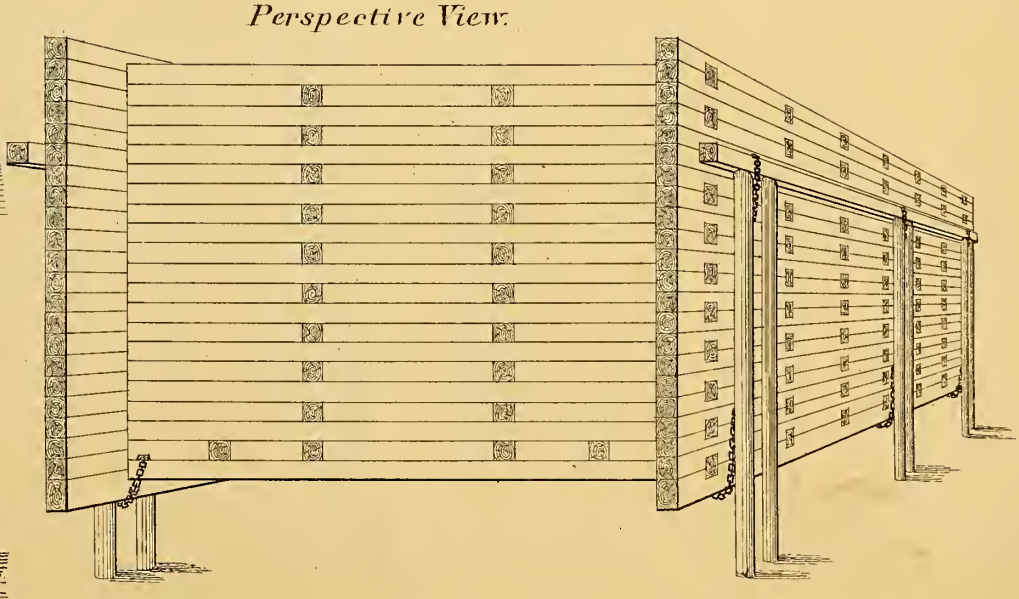
1873.

Engraved in the Office of the Chief of Engineers.

End View.

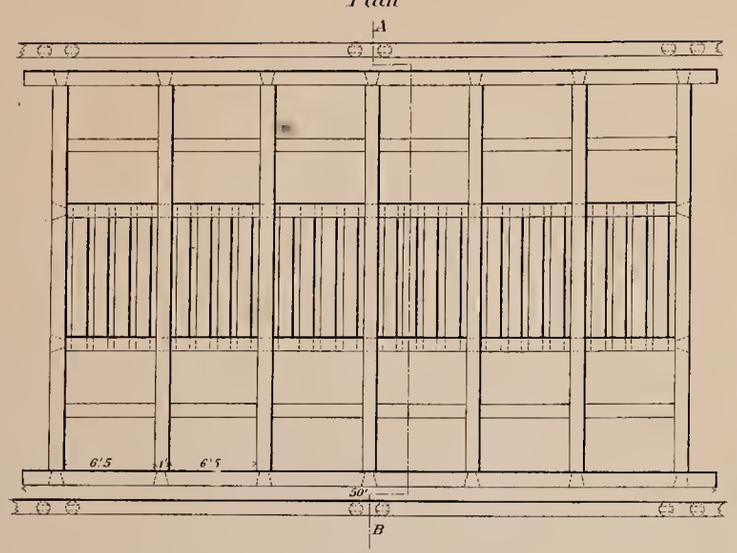


Perspective View.

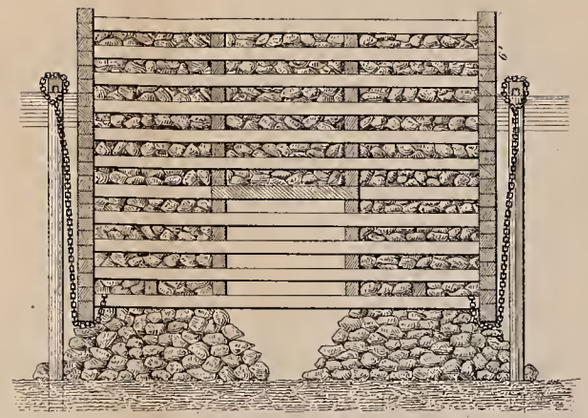


Scale 1 in.- 10 ft.

Plan



Cross Section through line A.B.



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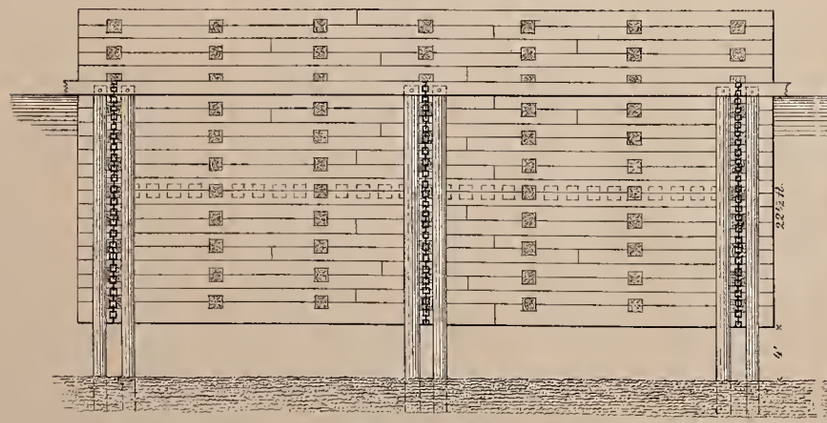
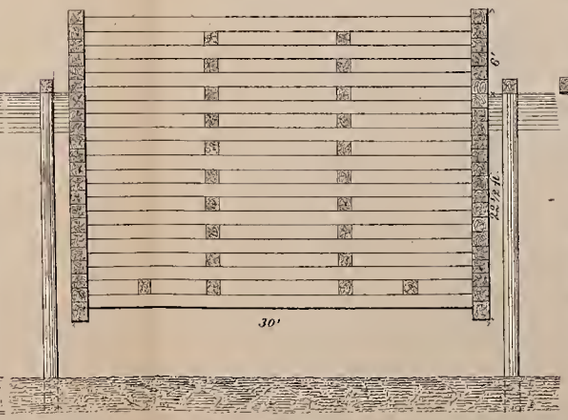


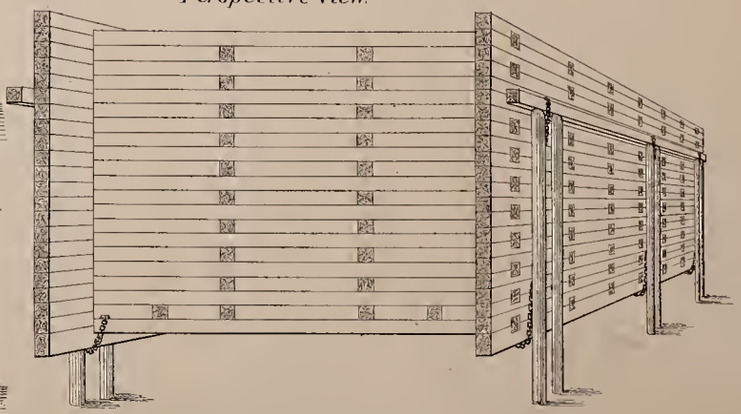
Scale 1 in.-10 ft.

End View.



Scale 1 in.-10 ft.

Perspective View.



METHOD OF SINKING CRIBS,

DEVISED BY D. C. HOUSTON, MAJOR OF ENGINEERS, U. S. A.

UNITED STATES ENGINEER OFFICE,

Chicago, Illinois, October 28, 1874.

GENERAL:

I have the honor to transmit herewith drawings showing method of sinking cribs devised by me, with the object of preventing any settling or displacement of the cribs.

Six piles are driven on each side of the site of the crib, in pairs, as shown in the drawing and perspective view. The piles are capped with a stick of oak timber, running the whole length of the crib. The crib is built in three compartments by partitions running lengthwise. The middle compartment has a close bottom, about 13 courses below the top. The outer compartments have entirely open bottoms, or may have a single longitudinal stick, as shown in the drawing. In the cribs sunk at Chicago they are entirely open, which is considered preferable. Chains are attached to the lower cross timbers of the crib, three on each side. The chains are made of sufficient length to enable them to be securely fastened to the oak timber between each pair of piles, when the crib is lowered to its required position. The piles having been driven and capped, and the crib framed, the latter is lowered to its position and weighed down with stone, until its bottom is (say) four feet above the bottom of the lake.

The chains are then secured to the oak timbers in the manner described.

The upper end of the chain is provided with a hook which will pass through any link.

It was found desirable to take two turns of the chain over the oak timber. This prevents any further settlement. The filling then proceeds, care being taken not to put too much stone in the middle compartment, to bring too great a strain on the chains until the outer compartments are filled. These outer compartments having open bottoms, allow the stone to pass through freely. Foundations are thus formed

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on which the crib rests. In case of any undermining the stone passes down without taking the crib with it, and thus prevents any displacement or settlement of the crib.

The stone in the middle compartment, which has a close bottom, does not move, and is sufficient to secure the crib in its place in case of storms, and prevents the possibility of the crib rising by the sifting of the stone through the grillage bottom, as has sometimes occurred. It is considered that the bottom of this middle compartment may be nearer to the top of the crib.

The crib thus remains in the position in which it was originally placed, and the superstructure can be put on at once. Three cribs have been placed in this manner in the Chicago breakwater, and so far successfully. After a crib has been once placed and filled in this manner it is not seen how it can be displaced.

This method is adapted to all soft or sandy bottoms, where there is a tendency to undermine. It ensures a close fit of the cribs, and a perfect alignment, and avoids the difficulties and expense of leveling up and otherwise arranging for the superstructure.

This method has also the advantage of securing the crib during the process of sinking. The additional cost of the piles, &c., is more than compensated for in the diminished amount of timber and stone required, and the reduced cost of putting on the superstructure. The superstructure need not necessarily be continuous. Additional stone should be thrown in on each side of the crib.

I am, General,

Very respectfully, your obedient servant,

D. C. HOUSTON,

Major of Engineers.

Brig. Gen. A. A. HUMPHREYS,

Chief of Engineers, U. S. Army.